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Department of Health Research
Ministry of Health and Family Welfare, Government of India

Standard Treatment Workflow (STW)

APPENDICITIS

ICD-10-K35

PRESENTATION OF APPENDICITIS MAY BE AS

1) Acute appendicitis - early / delayed
2) Appendicular mass
3) Recurrent appendicitis

ACUTE APPENDICITIS
(Early presentation within 72 hours)

SYMPTOMS OF ACUTE APPENDICITIS

1) Pain
a) Periumbilical or epigastric colic (in nonobstructive type the pain may start at RIF)
b) Shifting of pain from periumbilical region or begins from this site
2) Nausea/ vomiting
3) Pyrexia (usually absent in first 6 hours)
4) Loss of appetite

NB:
a) Pain always precedes vomiting (Murphy). Onset of symptom is more acute and abrupt in acute obstructive appendicitis
b) If the patient has rigor and high fever within 24hrs of the onset of pain, appendicitis is most unlikely

SIGNS OF ACUTE APPENDICITIS

1. Pointing sign – The patient points with the index finger the site of maximum pain at region of Mc Burney's point
2. Cough test – C/O pain at right iliac fossa on coughing
3. Tenderness at Mc Burney's point
4. Muscle guard at right iliac fossa (RIF)
5. Rovsing's sign – pain at RIF with sudden thurst of palpation at left flank of abdomen
6. Rebound tenderness – pain at RIF with sudden withdrawal of the maintained pressure with hand
7. Generalised rigidity is a sign of generalized peritonitis; it is less marked if obese, emaciated, extremes of age

NB:
a) When appendix is retrocaecal the signs of appendicitis may be masked
b) Inflamed pelvic type of appendix in contact with urinary bladder or rectum may produce features of cystitis or tenesmus
c) Post ileal appendix may cause diarrhoea and marked retching.
d) With progress of pregnancy, appendicular pain may be up at right flank of abdomen as the caecum and appendix are pushed up
e) Females with inflammatory pelvic organ disease e,g, salpingitis may have history of dysmenorrhoea and purulent vaginal discharge

FACTORS FOR PREPONDENCE COMPLICATIONS

1. Extremes of age
2. Immunosuppression
3. Diabetes Mellitus
4. Faecolith obstruction of appendicular lumen
5. Previous abdominal surgery

INVESTIGATIONS

The diagnosis of acute appendicitis is essentially clinical. The investigations include:
1. Full blood count – usually shows leucocytosis with raised polymorphs
2.Urinalysis to exclude urinary tract infection
3.Ultrasonography – often very helpful to confirm diagnosis and identifying periappendicular collection of exudate or abscess
4.Plain X-ray abdomen – to rule out ureteric calculus or peptic perforation
5.CT scan of abdomen – useful in special situation of uncertain diagnosis of appendicitis

TREATMENT

1) Treatment of a diagnosed case of acute appendicitis is appendicectomy except in special situations where surgical facility could not be provided or the patient presented late with appendicular mass. The essential preoperative investigations including routine blood sugar, urea, creatinine, Hb%, chest X-ray and ECG in all elderly patients. Intravenous fluid and broad-spectrum antibiotics to be started on admission
2) Acute appendicitis should be recognized early before it is allowed to reach the stage of peritonitis or an abscess formation. Clinical state and experience of the clinician should guide when to operate and when not to operate

APPENDICECTOMY MAY BE

1) Conventional open surgery
2)Laparoscopic appendectomy

CHECKLIST FOR AN UNWELL PATIENT (HAVING FEVER, ANOREXIA ETC) FOLLOWING APPENDICECTOMY

1) Examine the operation wound for induration, collection or purulent discharge
2) Consider residual abscess (pelvis, RIF or Hepatorenal pouch of Morrison
3) Examine iungs for pneumonia or collapse
4) Thrombophlebitis
5) Any jaundice or enlarged liver
6) Urinary tract infection if any

ACUTE APPENDICITIS (Late presentation beyond ≥ 72 hours)

→ **NO PALPABLE MASS** Appendicectomy open/ laparoscopic

→ **PALPABLE MASS** Ochsner sherren regimen

- S/S Improving conservative treatment continued
- S/S Deteriorating asses by USG for pus collection USG guided aspiration/ open drainage

APPENDICULAR MASS

OCHSNER-SHERREN CONSERVATIVE TREATMENT

(In the presence of appendicular mass, surgery may cause more bleeding, injury to caecum and ileum; faecal fistula may develop). Conservative treatment includes
- IV fluid:
- Broad spectrum antibiotics
- Vitamins
- **No purgative**
- **No Enema**

SIGNS OF IMPROVEMENT IN PRESENCE OF APPENDICULAR MASS

- Reduced pain
- Patient feeling better
- Appetite improves
- Tenderness diminishes

CRITERIA FOR STOPPING THE CONSERVATIVE TREATMENT

- A rising pulse and body temperature
- Increasing intensity and spreading abdominal tenderness
- Increasing size of the mass
- Vomiting or copious gastric aspirate

NB: OPERATION FOR APPENDICULAR MASS IF INDICATED SHOULD ALWAYS BE DONE AT HIGHER CENTRE AND PERFORMED BY AN EXPERIENCED SURGEON.

RECURRENT APPENDICITIS

Diagnosis is mainly clinical. Usually a past history suggestive of acute appendicitis is present and latter shows a history of recurrent acute pain at RIF or it may follow a chronic course. Signs of indigestion, flatulence may be present. Mc Burney's point tender. Ultrasonography often compliment the clinical diagnosis. CT-Scan and barium follow through X-ray are often required to confirm the diagnosis. Treatment is appendicectomy - open or laparoscopic

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES